U.S. Department of Energy
Office of Civilian Radioactive Waste Management

OCRWM Repository Program Status

Presented to:
National Spent Nuclear Fuel Program Strategy Meeting

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YUCCA MOUNTAIN PROJECT

Overview

- Design Update
- Site Recommendation Consideration Report (SRCR) Status
- NRC Sufficiency Review for Site Recommendation (SR)
- EIS Process and Path Forward
- License Application (LA) Development - Next Steps
- Status of Regulatory Revisions
- Summary

Design Update

Evolution of Repository Design for SRCR

- **Design continues to evolve**
  - **Higher thermal output for commercial SNF prompted removal of backfill from base case**
  - **Other relatively minor modifications to the waste package and repository subsurface layout are under consideration**
- **Current design concept offers operational flexibility**
  - **Can be operated above boiling after repository closure**
  - **Can be operated below boiling after closure, with adjustments to operational modes**
  - **Operational variables include staging of waste before emplacement, waste package spacing and ventilation duration**

Design Update
Incorporation of Design Features in TSPA-SR

- **TSPA-SR will incorporate the no-backfill design in the base case analyses**
  - **Performance with backfill as design option will be examined through sensitivity studies**
- **TSPA-SR will address an above-boiling operational mode as the base case**
  - **Sensitivity analyses will address the below-boiling operational mode**

SRCR Status

- **The SRCR will provide a means to inform the public in the vicinity of the site and the governors of the States, and facilitate their comment on a possible site recommendation as required by the Nuclear Waste Policy Act**
- **The SRCR will contain:**
  - **A description of the proposed repository, including preliminary engineering specifications**
  - **A description of the waste form and packaging**
  - **A discussion of data obtained in site characterization relating to the safety of the site**
  - **A preliminary evaluation of the site against the DOE site suitability guidelines**

SRCR Status

Technical Basis for SRCR

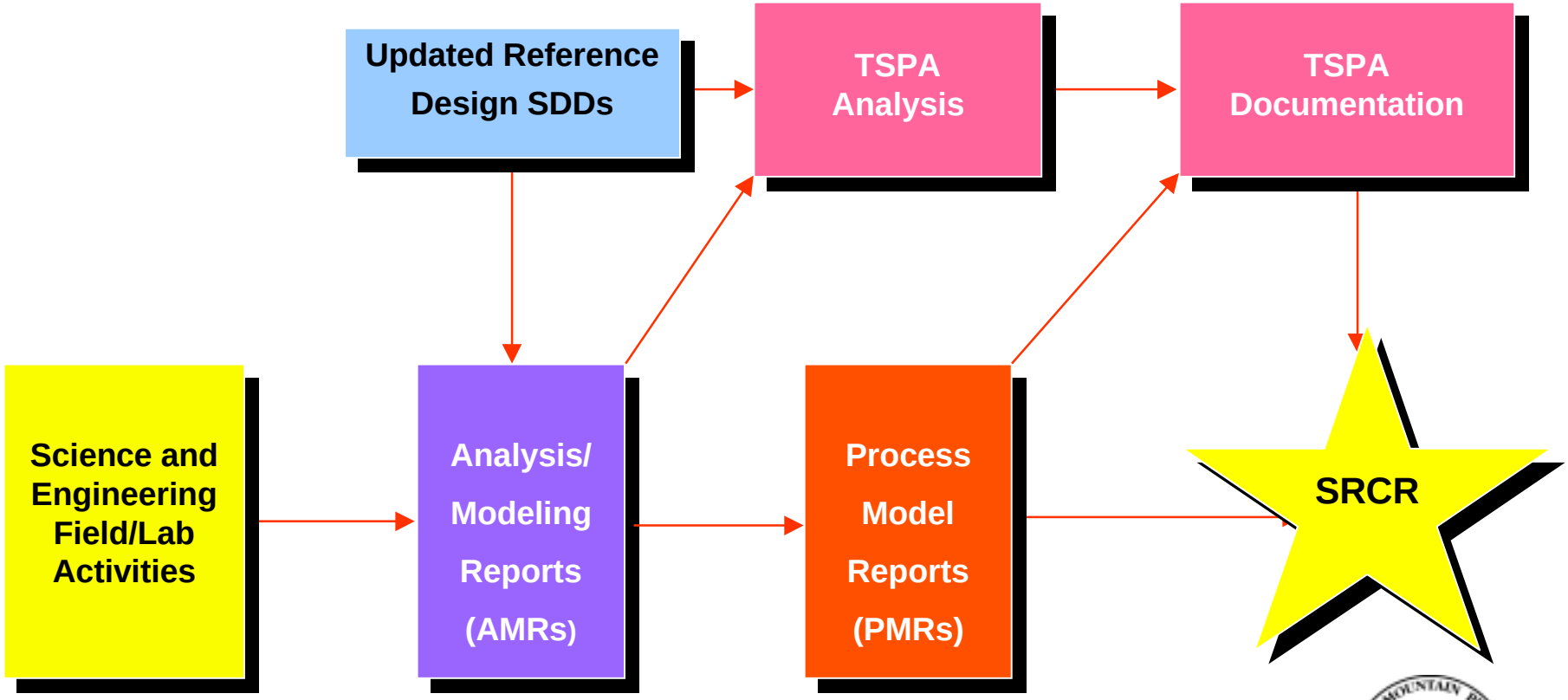
- **Technical basis documents for SRCR include:**
  - **Total System Performance Assessment (TSPA-SR)**
    - **TSPA is the primary tool for integrating scientific and design information for evaluation of post-closure performance**
  - **Process Model Reports (PMRs) (9 total)**
    - **Present summary information on the key process models for evaluating system performance and provide the basis to support TSPA-SR and the SRCR**
  - **Analysis and Model Reports (AMRs) (121 total)**
    - **Document data, interpretations, analyses, conceptual models, and abstractions that support PMRs and TSPA**
  - **System Description Documents (SDDs) (24 total for SRCR)**
    - **Together with design analyses, provide the design basis for SR**

SRCR Status
Technical Basis for SRCR (continued)

- **Technical basis documents for SRCR (continued):**
  - **Site Description Document**
    - **Provides documentation of the site information required for SRCR**
  - **Preliminary Preclosure Safety Analysis**
    - **Provides the basis for a preliminary evaluation of compliance with the preclosure site suitability guideline**
    - **Starting point for developing the Integrated Safety Assessment for LA**
  - **Technical Update Reports**
    - **Provide public access to the most current information and assessment of relevance to technical basis for SRCR (and later for the SRR and the LA)**

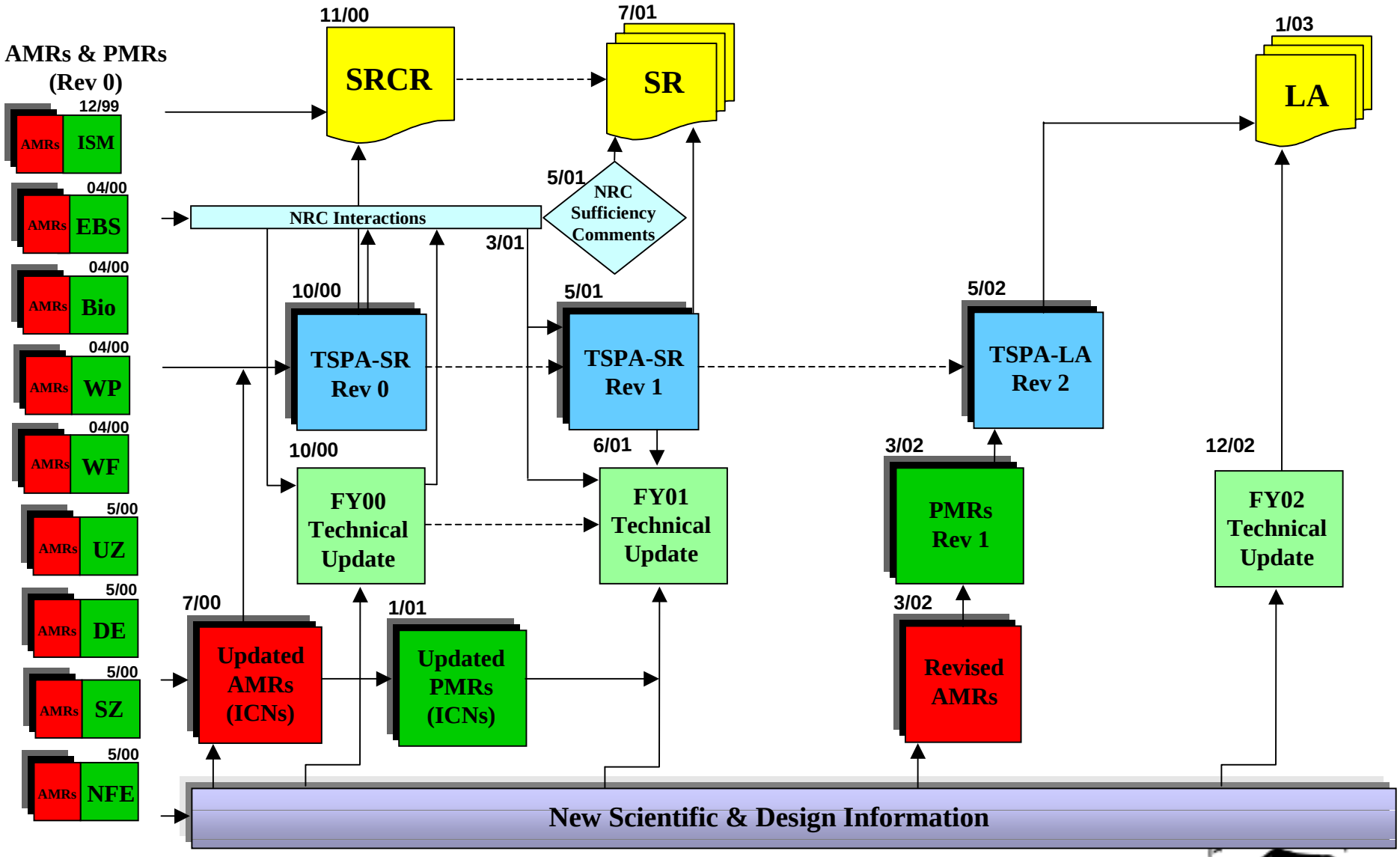
SRCR Status

Analyses and Documentation for the SRCR



SRCR Status

Technical Basis Documents



SRCR Status

- **Rev 0 PMR status**
  - **1 PMR (Integrated Site Model) is complete**
  - **8 PMRs have been accepted by DOE with conditions**
- **Rev 0 AMR status**
  - **111 of 121 Rev 0 AMRs are complete as of June 5, 2000**
  - **26 AMRs will be updated through ICNs to reflect design evolution and provide traceability for TSPA-SR Rev 0; one new AMR will be developed to reflect design evolution**

SRCR Status
(continued)

- **TSPA-SR Rev 0 to be released October 2000**
  - **TSPA-SR Rev 0 will be updated for SR to reflect substantive new information derived from revisions to supporting AMRs**
  - **Another iteration of TSPA is planned for LA**
- **System Description Documents (SDDs) for SRCR are expected to be completed in July 2000**
  - **SDDs will be updated and expanded to incorporate greater design detail and additional engineering analyses for the LA**
  - **Additional SDDs will be developed to support the LA**
- **The SRCR is scheduled for public release in late 2000**

NRC Sufficiency Review for SR

Basis for NRC Sufficiency Review

- **NWPA Section 114(a)(i)(E) requires that the Secretary include with the basis for a SR**
  - **"preliminary comments of the Commission concerning the extent to which the at-depth site characterization analysis and the waste form proposal for such site seem to be sufficient for inclusion in any application to be submitted by the secretary"**

NRC Sufficiency Review for SR
DOE Understanding of NRC Approach

- **NRC's sufficiency review will result in a report on DOE progress toward sufficiency of data, design, and analyses for LA; it is not a licensing review**
- **In its review, NRC will:**
  - **Consider both current information and DOE's plans**
  - **Focus on the foundations for the safety case and performance estimates (i.e., data and models)**
  - **Consider status of Key Technical issue (KTI) resolution**
  - **Assess DOE progress toward qualifying data and codes, and validating models for use in licensing**
- **Sufficiency will be evaluated in context of NRC's risk-informed, performance-based approach to licensing**

NRC Sufficiency Review for SR
DOE Understanding of NRC Approach (Continued)

- **NRC will provide preliminary comments on:**
  - **Where data and analyses appear sufficient/insufficient**
  - **What additional data or analyses are needed and when they are needed**
  - **Whether conceptual models are supported**
  - **Status of DOE's QA efforts (data, software, models)**
- **NRC will not take a position on DOE's dose calculation or evaluate compliance with 10 CFR Part 963**
- **NRC/DOE prelicensing consultations will continue and focus on issue resolution**

NRC Sufficiency Review for SR

DOE Comments on NRC Approach

- **The technical documents supporting the SRCR provide the information necessary for NRC to complete its sufficiency review and meet the intent of the NWPA**
  - **Consistent with process proposed to NRC by DOE in a November 24, 1999 letter**
- **NRC comments on the need for additional data or analyses will be considered by DOE in its planning for LA**
- **DOE efforts to qualify data and software, and validate models focus on completion for LA**

NRC Sufficiency Review for SR

Proposed Schedule for NRC Sufficiency Interactions

• TSPA-SR Methods & Assumptions	6/6-7/00
• UZ Flow & Transport PMR	7/12-13/00
• Disruptive Events - Seismic	7/18/00
• SZ Flow & Transport PMR	7/27/00
• Biosphere PMR	8/29/00
• Disruptive Events - Igneous	8/30-31/00
• EBS PMR/Near-Field Environment PMR	9/6-7/00
• Waste Package & Waste Form PMR	10/12/00
• Surface & Subsurface Design SDDs	10/24/00
• Repository Safety Strategy	11/7/00
• KTI Resolution Status Meeting	11/7-8/00

EIS Process and Path Forward

Status of Public Comments

- **2,302 comment documents received as of May 31, 2000**
- **11,117 comments identified in 27 categories**
- **Comment Breakdown**
  - **15% Alternatives**
  - **26% Transportation**
  - **17% NEPA process**
  - **42% Remaining 24 categories**
- **Comments will be addressed and appropriate changes incorporated in the final EIS**
- **A Comment Response Document will be a part of the final EIS**

EIS Process and Path Forward

- **The SR is scheduled to be completed in July 2001**
- **The Nuclear Waste Policy Act requires that the final EIS accompany the SR**

LA Development - Next Steps

- **Current plans call for LA submittal to NRC in FY 2002 if the site recommendation becomes effective and adequate funding is provided**
  - **The LA will provide the information needed for the NRC safety review required for issuance of a construction authorization for the repository**
- **The LA will be developed through an iterative process, beginning in FY 2001**
  - **DOE's Technical Guidance Document will provide guidance on LA format and content**
  - **The Technical Guidance Document will be revised following issuance of NRC final rule and Yucca Mountain Review Plan for the LA**

LA Development - Next Steps
(continued)

- **Discussions continue with NRC to ensure mutual expectations on LA content and format are clear**
- **Integrated LA development process**
  - **LA sections will be prepared and reviewed as technical input become available; programmatic input will be developed first (radiation protection, conduct of operations, land ownership and control, quality assurance)**
  - **Review teams, including EM representatives, will be established to review draft sections, while the sections are in early development**
  - **Consolidated draft LA will undergo DOE-wide review**

Status of Regulatory Revisions
10 CFR Part 963 - DOE Site Suitability Guidelines

- **Supplemental notice of proposed rulemaking issued for comment November 30, 1999**
- **Draft final rule sent to NRC in May 2000 for review and concurrence**
  - **Draft final rule addresses comments received during public comment period**
  - **NRC concurrence process consistent with NWPA and process followed for issuance of original guidelines**
- **NRC working to respond to DOE request to complete concurrence process to support the DOE site recommendation schedule**

Status of Regulatory Revisions
40 CFR Part 197 - Radiation Protection Standards

- **Proposed rule issued for comment August 27, 1999**
- **Comment period closed in November 1999**
- **There is no indication that EPA will deviate from its original plan to issue a final rule this summer**

Status of Regulatory Revisions
10 CFR Part 63 - NRC Repository Licensing Criteria

- **Proposed rule issued for comment February 22, 1999**
- **Draft final rule addressing comments provided to Commission for consideration in April 2000**
- **The schedule for Commission action on the final rule is not known**
- **NRC is required by the Energy Policy Act to modify its rule, as necessary, to be consistent with EPA's Radiation Protection Standards for Yucca Mountain Nevada (when finalized)**

Summary

- **DOE's primary focus for CY 2000 is on completing the SRCR and its technical basis**
- **The technical basis documents will be made available to NRC and the public after acceptance by DOE**
- **Future NRC/DOE interactions will focus on the technical basis documents as a means to provide information to NRC for its sufficiency review**
- **The DOE final EIS will accompany any SR**
- **Progress toward submittal of a LA to NRC is dependent on whether a site recommendation is made and becomes effective, and adequate funding**